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ABSTRACT

This paper presents findings from an historical investigation of visual literacy, a unique aspect being that the approach relied on the marriage of two disciplines--geography and history--which study change over time. Maps and their interpretation of data by cartographers tend to provide a foundational context that can illuminate past and present and establish connections between them. In this case, using a variety of sources, researchers mapped historical aspects of visual literacy with a geographic information system (GIS). Discussion and figures explore: (1) a time line of seminal works in critical viewing, the psychology of art, and visual literacy; (2) the acquisition and organization of the correspondence of Dr. Henry Ray, an important figure in the field, by Kent State University (location of his correspondents indicates pockets of interest in visual literacy); (3) government funding for educational programs in visual literacy; (4) media preservation efforts; and (5) visual literacy education efforts in non-school settings like museums and libraries. By overlaying a map depicting one data source with a map depicting another data source, relationships between the two data sources become more apparent than if the two data sources were described solely in a written format. (Contains 25 references.) (AEF/BEW)

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A Cartographic Interpretation of Visual Literacy: An Historical Perspective

by Cindy L. Kovalik and Kim Lambdin

ED 408 970

Abstract

This paper presents findings from an historical investigation of visual literacy. The unique aspect of this historical inquiry was that the approach relied on the marriage of two disciplines, geography and history, both of which involve the study of change over time. Maps, the interpretation of data by cartographers, tend to provide a foundational context that can illuminate and establish connections between the past and present world. Using a variety of sources, historical aspects of visual literacy have been mapped using a geographic information system (GIS). By overlaying a map depicting one data source with a map depicting another data source, relationships between the two data sources may become more apparent than if the two data sources were described solely in a written format.

Introduction

Visual literacy is an eclectic blend of disciplines including linguistics, philosophy, art (Jonassen & Fork, 1976), semantics, and the scientific investigation of vision. Tracing the development and history of visual literacy from a historical perspective encourages a mingling of diverse approaches that attempt to characterize the impact and importance of past research, seminal writings, and practical implementations in an effort to better grasp the diffuse nature of visual literacy.

Important to this effort is placing the development and growth of visual literacy in a context. Multiple constituents have contributed, and continue to contribute, to the field of visual literacy. Identifying categories that impinge on a contextual representation of visual literacy was a first step in an effort to look at visual literacy from a historical perspective.

A second step was to identify a vehicle through which to convey historical data. The goal was to use a visual representation of historical data rather than a verbal description. The multifunctionality of maps led us to choose a mapping strategy for graphically representing the data we collected.

Geography provides, a way to join individual data elements within common boundaries. Blending historical data with geographic reference points provides a way of looking at information that may generate new questions and new perspectives. Interrelationships may become more apparent, or less so.

The ability to create maps of historical data has been made more accessible through the use of technology, specifically geographic information systems (GIS). Such systems are capable of acquiring, storing, manipulating, and analyzing large amounts of data and presenting them in the form of digital or paper maps. The visualization and consequent analysis of historical data through maps offers a unique perspective on information that, if viewed solely tabularly or through a trail of words, may remain obscure.

Investigative Strategy

Recognizing that fields of research and study such as visual literacy do not exist in isolation, but rather are intertwined with existing systems, sources were chosen to provide a representative sampling of data. These varied data sources place visual literacy within a contextual framework. the purpose of this approach was to determine if geographic location provides a visual basis for formulating questions about relationships and connections between and among the data sources. Included in the historical investigation were: a time line of seminal works in visual literacy; historical archival research through primary source data from one public school educator who has concentrated on improving perception in children; identification of governmental influence on visual literacy through funded educational programs; a sampling of

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scientific research related to vision and perception; the collection and preservation of a media format; and current non-school programs concerned with visual literacy.

Historical investigations may benefit from the inclusion of a rich diversity of data sources. Each source provides not only its own unique perspective of the area under study, but also contributes to a more comprehensive delineation of a particular time in history as each data source is juxtaposed with other data sources.

The mid-1960's to the mid- to late-1970's served as the focal point for our investigation. Limiting the timeframe enabled a cohesive structure to emerge. This emergent structure served as the background upon which successive layers of data were placed. The next sections briefly describe each data source.

Time Line of Seminal Works

Plotting historically relevant events against the backdrop of seminal works may reveal relationships, highlight clusters of events, and illuminate key theoretical aspects in the evolution of visual literacy.

This section encapsulates the work of Debes and Williams (1978) and Hortin (1994) on the theoretical underpinnings of visual literacy. The early history of visual literacy is designed to provide a backdrop from which to explore the *Zeitgeist* surrounding the development of visual literacy.

Before visual literacy was actually a term, magazines such as *Life* and *Look*, published in the 1950's and 1960's, played key roles in telling a story or delivering a message through photographic essays. The real impetus, however, for gaining an understanding of visual literacy emerges as television moves into the American home in the mid- to late-1950's. Visual images bombard the American public as never before. Concern over children being passive receivers of information helps focus attention on the need for visual literacy skills (Jonassen & Fork, 1976).

For those immersed in the creation and use of visual images, such as Jack Debes of the Kodak Company, such concern over the need to expose children to visual literacy skills was translated into the formation of a new 4H program. First announced in 1961, the study of photography through the auspices of 4H has since evolved into the largest program of photographic instruction in the world (Debes & Williams, 1978).

In 1962, Paul Wendt (1962) postulates that the meaning of pictures lies in what the viewer brings to them. This begins to focus study in visual literacy on the individual's perception of the message that is being conveyed visually.

. During the mid-1960's, Jack Debes began work on slide shows created for educational purposes. These became known as The Photo Story Discovery Sets and were primarily used to educate school children about photography and the interpretation of photographs. Jack Debes and Kodak were also instrumental in the publication of a magazine called *Visuals are a Language* that encouraged educators to think about the impact and meaning of visuals in education (Debes & Williams, 1978).

Rudolph Arnheim's *Toward a psychology of art* was published in 1967 (Arnheim, 1967). Arnheim's thesis asserted that reasoning is not limited to the manipulation of words and numbers. Arnheim was concerned that education tended to overemphasize verbal language while downplaying the significance of visual "language" on creativity and learning.

The growing interest in the connection between visual literacy and education led to the formation of a visual literacy association in 1968. The first conference of the visual literacy association was held in 1969 in Rochester, New York. Proceedings of the first conference were subsequently published in 1970 (Debes & Williams).

In this same time period, Noam Chomsky wrote *Language and mind* (Chomsky, 1968) which explores the concept of a universal grammar that constitutes the study of the nature of human intellectual capacities. Arnheim, in 1969, authored *Visual thinking* (Arnheim, 1969) in which he contends that all thinking is basically perceptual in nature. For Arnheim, perception is a cognitive ability.

Colin Murray Turbayne, an Australian philosopher, wrote *The myth of metaphor* in 1970 (Turbayne, 1970). This work had a

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tremendous influence on the development of visual literacy theory. Turbayne (1970) posits that man uses metaphor to illustrate ideas, control thoughts, and induce behavior. Turbayne (1970) defines metaphor as the pretense that something is the case when it is not.

The 1970's saw the inception of the *Visual Literacy Newsletter* and the establishment of the "Rochester School," where Jack Debes, Clarence Williams and Colin Turbayne worked together to clarify and define the theoretical foundations of visual literacy (Debes & Williams, 1978).

The mid-1970's see further refinement of visual literacy precepts. D. A. Dondis' *A primer of visual literacy* is published in which differences between visual and verbal language are identified (Dondis, 1973). P. A. Gozemba (1975) hypothesizes that Chomsky's universal grammar ideas are tied to the theoretical constructs of visual literacy and that the study of visual literacy may yield data on relationships between speaking, writing, visualizing, and learning.

A program aimed at learning from media and pictures was produced by the New York State Department of Education in 1976 (Hortin, 1994). In that same year, E. B. Feldman (1976) lists visual literacy implications for education:

- there is a language of images and it can be learned;
- much of what we know about the world has been learned through visual images without benefit of formal instruction; and
- several disciplines that study art constitute ways of reading visual language.

According to Feldman (1976), the key is whether perception of visual images can be regarded as critical thinking rather than programmed responses.

In 1977, Harry S. Broudy (1977), an art educator, argues for the inclusion of aesthetic education in schools. M. Fleming and W. H. Levie publish *Instructional message design: Principles from the behavioral sciences* in 1978 (Fleming & Levie, 1978) and J. E. Hill (1978) calls for more cooperation between communication theorists and instructional technologists.

Also during 1978 J. Flory (1978) identifies four primary concepts that support the study of visual literacy:

1. a visual language exists;
2. people can and do think visually;
3. people can and do learn visually; and
4. people can and should express themselves visually.

This abbreviated identification of seminal works in visual literacy provides a framework upon which to place other aspects of visual literacy that were occurring during this time. The work of Dr. Henry Ray (Ray, 1965; Ray, 1967; Ray, 1971) provides a starting point in this endeavor.

Archival Research

Kent State University is in the process of acquiring Dr. Henry Ray's papers for the Kent State University archival collection. Already in the collection are files of correspondence dating from the mid-1960's through the mid-1970's. Requests for information and advice came to Dr. Ray not only from within the United States, but also from around the world, including India, Japan, South Africa, England, Israel, and Australia. Notable in the collection is correspondence with Rudolph Arnheim, who visited with Dr. Ray in the unique learning environment Dr. Ray pioneered, the Special Experience Room at McDonald Elementary School in Warminster, Pennsylvania.

Henry Ray graduated from Kent State College, (now Kent State University) Kent, Ohio, with a 2-year teaching diploma in 1934. In 1945 he received his bachelor's degree from Kent. By 1955, Dr. Ray had earned his doctorate from Teachers College, Columbia University.

After receiving his doctorate, Dr. Ray became Assistant Superintendent of Schools in Bucks County, Pennsylvania and eventually moved to the position of Director of Teaching and Learning Resources for the Centennial School District in Warminster, Pennsylvania.

Dr. Ray's career and life have centered on his love and enthusiasm for perception and what he calls "relational thinking." As Dr. Ray (personal communication, June 3, 1996) says, "I feel that if the kids are going

to be motivated and triggered to learn, or to [participate] in the learning experience, they ought to have a setting [where] they could do this and that's why I wanted a special experience room."

The Special Experience Room (now called The Dr. Henry Ray Special Experience Room) engulfs children with images and sound. It is a domed structure, the center hub of the McDonald Elementary School, built with governmental grant money in 1968.

In the mid-1960's the Centennial school district needed a new school to accommodate its growing population. The local superintendent asked Dr. Ray, "What would you like to see in this new school?" Dr. Ray responded by saying, "I would like a room where I could surround the kids with vision and sound and color..." (personal communication, June 3, 1996).

Thus was born the Special Experience Room. Central to the programs conducted in the Special Experience Room are numerous slide sets assembled by Dr. Ray that focus on teaching the art of perception. Consisting almost entirely of photographs taken by Dr. Ray, the programs range from dinosaurs to the zoo to spring skies to scarecrows.

Throughout the late 1960's and 1970's Dr. Ray published a number of articles about his work with students in the Special Experience Room. Perception, creativity, and the utilization of media in education have been the major themes in his writings. His articles appeared in journals such as *Audiovisual Instruction* (Ray, 1965), *NEA Journal* (Ray, 1967), and *Childhood Education* (Ray, 1971).

While he was actively involved in the operation of the Special Experience Room, Dr. Ray

- was sought out as a speaker at numerous educational conferences throughout the country;
- served as a consultant to school districts as far away as Alabama;
- was asked to be on a U.S. government project headquartered in New Mexico on improving visual perception in young deaf children; and
- spent almost two years in Afghanistan as an educational consultant.

An accomplished artist in several media, Dr. Ray has had

- his own radio program in which he played the piano;
- two original fingerpaintings included in a book by Virginia Betts on fingerpainting (Betts, 1968); and
- a one-man photography exhibit at a college in New Jersey.

And Dr. Ray is still actively creating visual experiences for children through his photography and other artistic endeavors at the age of eighty-seven!

It is the correspondence portion of Dr. Ray's papers that furnished mapable data for this historical look at visual literacy. The location of each correspondence was plotted on a map of the United States. The resultant map provides a geographic interpretation of Dr. Ray's possible influence in the area of visual perception (see Figure 1).

Figure 1
Dr. Henry Ray Correspondence
1967-1975

Governmental Influence

Governmental funding can provide the means to implement programs that would be virtually impossible to attempt without sizable monetary grants. Title III of the Elementary and Secondary Education Act awarded money in 1968 to the Warminster County Schools, for example, that was used to build and maintain the Special Experience Room mentioned above.

Title III of ESEA was originally established under the rubric of Projects to

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Advance Creativity in Education in 1965. Public law 89-10, frequently referred to as PACE, funded local educational agencies for "planning imaginative solutions to educational problems, for demonstrating worthwhile innovations in educational practice through exemplary programs, and for supplementing existing programs and facilities through model centers that provide services and/or materials" (Ohio Department of Education, 1967). In one sense, Title III money was aimed at narrowing the gap between educational research and educational practice.

Title III money has been distributed to programs having a visual literacy component or relationship in Alabama (Hawke, 1974), Minnesota (Minneapolis Public Schools, 1972), Massachusetts (Ziegler & Schulz, 1965), Michigan (McClafferty, 1969), Oklahoma (PACEReport, 1968), California (1968), and Nebraska (Wayne-Carroll Public Schools, 1974).

While it is difficult to identify every program funded through Title III that had a visual literacy component, government publications occasionally included titles and brief descriptions of exemplary programs (Program Dissemination Section, 1969a; Program Dissemination Section, 1969b; Time for a progress report: ESEA Title III, 1971). From these descriptions it was possible to cull a handful of additional Title III programs that made mention of media, art, perception, and the like.

Though few in number, the Title III programs thus identified were mapped as shown in Figure 2.

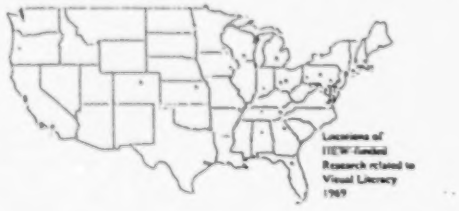
Figure 2
Locations of Selected Title III Grants
1969, 1971, 1974

Scientific Research Related to Vision and Perception

Government funding also extends to the research community as a whole. The scientific study of vision, ranging from eye movement to color sensitivity to perceptual coding, impacts the field of visual literacy. The strong relationship between scientific research and growth in the field of visual literacy prompted a preliminary documentation of scientific research supported by the U.S. Department of Health, Education and Welfare (HEW).

Information from one fiscal year (1969) indexed as research related to education, audio-visual aids; eye, vision, optical illusion; eye, visual feedback; and eye, visual perception were tabulated. These index categories yielded approximately eight-five individual research activities. The map in Figure 3 shows the locations of these various research activities. Not all eighty-five locations are unique, nor do they all fall within the contiguous forty-eight states. Upon close inspection of the map one can ascertain a few locations where indicators are stacked one on top of another indicating multiple projects occurring in one physical location. Diamond-shaped objects on the map denote research categorized under the main heading of eye, vision. Star-shaped objects denoted research activities or projects classified under the heading of education, audio-visual aids.

Figure 3
Locations of HEW-funded research related to visual literacy
1969



Preservation/Protection of Media

The importance of historical data can sometimes be enhanced by analyzing efforts in the present. Two avenues were pursued through which to document the status of visual literacy today. The first was through institutions involved in the preservation of visual history, the second was through current efforts in increasing understanding about visual literacy.

The role of protecting and preserving media over time traditionally falls to libraries and museums. Collections of verbal and visual works are normally acquired and housed in institutions accessible to the public, although there are instances where collections are available only for scholarly research.

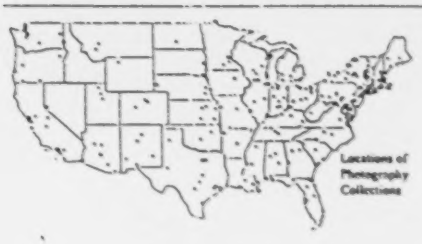
The accessibility and preservation of visual media is a critical aspect of the history of visual literacy since it is frequently only through the act of experiencing a media form that one develops a better understanding and appreciation of the significance of a particular work.

In this regard, photography was selected as the medium to investigate because of two reasons: (1) its tremendous impact on education and learning and (2) Dr. Ray's work which relies heavily on photographic images. As Janis (1989) states, it is through viewing photographic collections that

> "we begin to ponder on all that is known, and how we know it, and what to believe because of it. And we learn how others have come to interpret the world around them through photographic imagery. In the very structure of the camera image, in the very atmosphere of the chemistries, a world lies suspended forever in the photographic cocoon" (p. 16).

An index to American photographic collections (McQuaid, 1982) contains records of 458 public collections of photography. Over 19,000 photographers are represented in these collections. Figure 4 shows the locations of these collections across the United States.

Figure 4
Locations of current Photography Collections



Current Efforts in Visual Literacy Education in Non-school Settings

The final area investigated was visual literacy in non-school environments.

The impact of visual messages on societal communication raises the issue of the role of non-school institutions in increasing awareness and understanding of visual literacy constructs. What efforts are currently in existence that work to broaden the public's knowledge and understanding of visual messages? Are there institutions that supplement the visual literacy educational efforts that typically reside in the school environment? In an attempt to formulate a tentative response to questions like these, a questionnaire was devised to survey libraries and museums on their existing or planned visual literacy programs.

One hundred museums and one hundred libraries were selected from the *Official Museum Directory* (1996) and *American Library Directory* (1995), respectively. Two museums and two libraries were randomly selected from each state. Questionnaires were mailed to the attention of the Director of Educational Programs. The six-item survey asked respondents to indicate whether their institution has developed any educational programs in visual literacy and, if so, the name(s) and description(s) of the program(s), the length of time the program has been in existence, numbers of people participating in the program per session, age of the target audience, and the frequency in which the course is offered.

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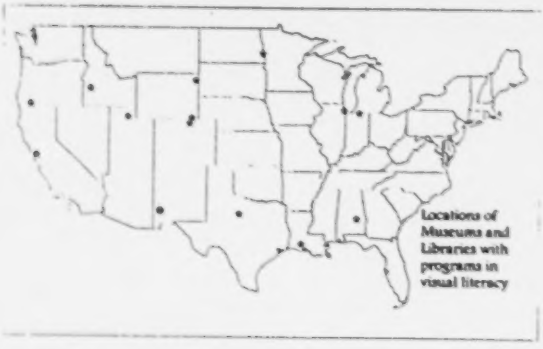
A total of fifty-five surveys were returned for a response rate of 27.5%. Library surveys returned (34) far exceeded those returned by museums (21), however, museums tended to have developed visual literacy programs at a much higher rate than libraries. Of the twenty-one museum surveys returned, fifteen indicated their respective institution did have programs related to visual literacy. In comparison, only one library indicated a program in visual literacy.

Locations of libraries and museums responding to the survey were mapped using their respective zipcodes. Figure 5 is one representation of the data collected. Each dot on the map indicates the location of a museum or library that has at least one program in visual literacy.

Figure 5
Locations of Museums and Libraries with programs in visual literacy



Although several museums indicated their visual literacy programs consist of gallery talks, specific visual literacy-related programs include:

- Art Safari - a series of children's art adventures with activities that relate to themes such as line, color, form, and shape.
- A visual literacy noontime seminar series.
- Vision and Illusion - a hands-on exhibit that presents visual perception concepts.
- Science ala "CART" - a demonstration that covers light, color and visual perception.
- Museum hunt - a visual awareness self-guided tour.

Unanticipated outcomes from the survey also yielded interesting information, including

- a telephone call from a librarian in Wyoming who had never heard of visual literacy. As a result of the telephone conversation, she received a copy of the brochure describing the 1996 IVLA conference.
- the receipt of several brochures describing specific visual literacy programs.
- indication from at least one museum that the school system in which the museum is located no longer includes art in its curriculum, thereby influencing the museum to establish a drawing program where "the emphasis is on process rather than product" and teenagers and adults work "next to six-year-olds."

Drawing conclusions from such a small sample of data is difficult. However, it is clear from the survey responses that museums have tended to assume a much more significant role in furthering visual literacy awareness than libraries.

Summary and Conclusions

Common threads held this investigative activity together. Dr. Henry Ray, a practitioner in the schools, served as the focal point.

Dr. Ray's strongest connection to seminal works in the field is through his correspondence with Rudolph Arnheim and the consequent visit by Arnheim to the Special Experience Room.

Dr. Ray was instrumental in obtaining Title III money used to construct, equip, and maintain the Special Experience Room. Investigating Title III grant money led directly to gathering additional data on scientific research grants which were likewise funded by the government.

Dr. Ray is an avid and accomplished photographer. His interest in photography prompted us to look into the preservation of photographic images which led, in turn, to the survey of libraries and museums and their influence on developing visual literacy skills through educational programs.

Acting as another common denominator, the mapping strategy necessitated the identification of data sources that could be linked to a physical location. While this

strategy was, at times, restrictive, it also opened up areas of investigation that might not have been apparent within traditional historical approaches.

The maps help contextualize the collected data in a visual sense. One can readily see the locations of people directly influenced or touched by one individual educator whose life has been spent working with visual awareness and perception. Schools throughout the country that received Title III money in the 1960's and 1970's to effect, in some way, visual literacy learning and development are observable by physical location within the United States. Scientific research activity on topics related to vision, perception, and learning, in 1969, appear to be clustered in the eastern portion of the United States. Locations of institutions actively involved in the preservation of photographic images appear in every state. The mapping of the location of institutions responding to the survey on visual literacy programs produces a glimpse of the future. The identified locations hold a promise for further enrichment of visual perception and visual awareness for society as a whole.

Viewing these various maps from single data sources yields an interesting perspective on each data source in isolation. However, it is by superimposing one data source on top of another that new questions and new avenues of research may become apparent. Do locations of Dr. Ray's correspondence coincide with locations where Title III money was granted? Are locations of scientific research contiguous with locations of Title III grant money recipients? Are any of the photography collections in close proximity to institutions with visual literacy educational programs? Are there relationships between one set of data and another?

Figures 6 and 7 are examples of superimposing one data source on top of another. New relationships can become apparent and serve as an impetus for further exploration.

Figure 6
Henry Ray Correspondence superimposed on HEW-funded research 1969

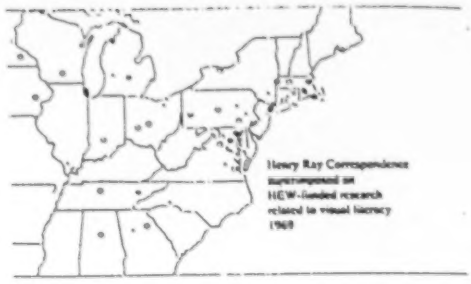
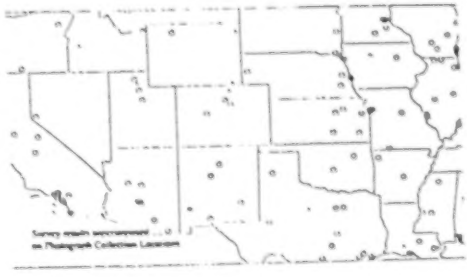


Figure 7
Survey results superimposed on Photograph Collection Locations



Exploring the existence or nonexistence of relationships between diverse sets of data helps integrate or separate data. The geographic mapping of the interconnected data collected in this study provides a visual spectrum that prompts questions and focuses attention on possible next steps in the pursuit of a contextual visual representation of the history of visual literacy.

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